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ABSTRACT

Five small colleges received a 3-year federal award designed to increase research participation on the part of faculty employed at these units. It was hypothesized that specific efforts in this direction would increase the number and quality of research proposals prepared by faculty members. A sequence of activities designed first to promote general awareness of research opportunities and to culminate with small grant awards in priority areas with formats similar to those now in use by the U.S. Office of Education was carried out. The following three conclusions were reached: 1) Initiation of institutional endorsement and encouragement of faculty research will increase faculty research involvement. 2) Within the framework of institutional endorsement, identification of an individual to collect and disseminate sponsored research information on a personal basis is the single most effective technique for increasing research involvement. 3) Faculty visitations to operational research sites in related fields produced the highest "subjectively identified" cause for increased research involvement. (Author/RT)

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Final Report

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Research Development Grant (RDG) Proposal For State University Colleges (N.Y.) at Brockport, Geneseo, Cortland, Oswego, and Roberts Wesleyan

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SUMMARY

Five small colleges (four State University units and one private college) received a three year Federal award designed to increase research participation on the part of faculty employed at these units. It was hypothesized that specific efforts in this direction would increase the number and quality of research proposals prepared by faculty members.

A sequence of activities designed first to promote general awareness of research opportunities and culminating with small grant awards in priority areas with formats similar to those now in use by OE was carried out.

Research activity was measured by several indices and although the most significant payoff period cannot occur for an additional year, preliminary analyses do show increased productivity at a rate exceeding that occuring in non-RDG units. Additional effects of RDG involvement were noted and benefits of the project are delineated in the formal report.

Conclusions occur in the form of generalizations with the following three findings worthy of consideration by other units engaged in similar programs.

1. Initiation of institutional endorsement and encouragement of faculty research will increase faculty research involvement.

2. Withing the framework of institutional endorsement, identification of an individual to collect and disseminate sponsored research information on a personal basis is the single most effective technique for increasing research involvement.

3. Faculty visitations to operational research sites in related fields produced the highest, 'subjectively identified' cause for increased research involvement.

INTRODUCTION

An attempt to increase research productivity of faculty members on small college campuses has been the major goal of this three year project.

Activities sponsored during the three year period have focused first on general awareness followed by more specific awareness leading to financial support for individual projects. General awareness, more completely described in the section, 'Seminars' was a goal of the initial year of operation. Narrowing the emphasis to specific awareness, a goal of the 68-69 academic year, is presented in the section 'Faculty Visitations and Focused Seminars', with a section on 'Small Grant Support' devoted to a description of the culminating RDG activity. Although there was considerable overlap of these activities due to differential development of individual units, these goals and time designations adequately serve as a structure for this final report.

A general organization within each of the colleges has evolved during the three year period and this structure along with the general type of activity engaged in is described in the section, 'Internal Organization'.

Several quantitative indices and case studies support the effect of this three year effort and are presented in the section, 'Results'. Both forms of evidence lend themselves to conclusions and recommendations suitable for consideration by other units desiring to increase their own research potential and are presented in the section, 'Conclusions'. An attempt has also been made to present conclusions along with each of the separate 'activity' sections.

ACTIVITIES

An original goal of RDG support focused on increasing educational research productivity of faculty members in five small colleges through the vehicles of:

1. an administrative organization adaptive to the unique needs of small institutions;

2. careful selection and nurturing of individual researchers; and

3. encouraging involvement in activities consistent with institutional goals.

The following activities were initiated, encouraged and supported.

Seminars

General seminars with well qualified speakers and open attendance appeared to be an economically efficient way of disseminating information to a wide number of people. However, although individuals may have become stimulated for a brief period of time after hearing qualified speakers, stimulation was not generally maintained and motivation to become involved in a specific project was easily lost.

A seminar schedule for the initial year of operation of the RDG project was designed to explore a variety of possibilities in an attempt to identify efficient, economical procedures which could be maintained as an on-going activity. Various approaches to seminars were identified by campus coordinators and trial types scheduled. Early assumptions included:

1. seminars should be instructional without offending sensitivities of college professors - implication - use well established educational leaders to present ideas basic to the research process and/or highly refined specialists;

2. seminars should be appealing to a large audience - implication - sponsor the seminar in a convenient, attractive setting, preferably around a free meal;

3. seminars should be pertinent - implication - general seminars should focus on the research process with specific seminars focusing on specialized areas. Department members across units can more appropriately identify and direct specific seminars.

After carrying out seminars designed to meet these assumptions and talking with participants and campus

coordinators it has been concluded that:

1. general seminars with top speakers designed for a broad audience;

    a. require considerable time, effort and money to organize and coordinate,
    b. lose appeal because of centralized presentation requiring one to one and one-half hour traveling time,
    c. can be highly stimulating,
    d. provide for conversation among individuals with similar interests,
    e. seldom provide significant impetus to promote individual involvement in research,
    f. raise general level of knowledge of participants;

2. small specialized seminars generally;

    a. generate more enthusiasm on the part of participants apparently because the participants are more directly involved with selection of topics and speakers,
    b. provide for both discussions among individuals with similar interests and general increase in knowledge levels,
    c. seldom result in specific involvement of individuals in carrying out research activities.

It is, therefore, concluded that informational seminars do not generally promote sustained motivation required for individual participation in research activities. A more efficient procedure for generating activity appears to involve the identification and selection of potential researchers and providing them with an opportunity to expand their own background through communication with similarly engaged researchers. Such communication with researchers may be carried out by transporting local personnel to operational settings in which they may observe both equipment and procedures being used by active workers in the area. Such a highly selective and individualized procedure is the least economical in terms of broad exposure but apparently has a much higher payoff in terms of sustained productivity.

Faculty Visitations and Focused Seminars

Another means of communication may be accomplished by bringing knowledgeable and specialized speakers on to the

campus and communicating with small groups of people. This alternative is limited in scope by the number of people on one campus interested in one specific topic and does not provide for the observation of facilities frequently used as an integral part of many experimentations. The opportunity to meet and carry on discussions with supporting and other related personnel as well as experimental subjects in various experiments is also unavailable when visitors are brought to the campus.

The initiative shown by a number of individuals in seeking available situations in which to conduct observations may serve as preliminary index of the level of involvement potentially available through the visitation procedure. The expansion of background information and potential for sustained motivation resulting from communication with research leaders has, through informal evaluations, shown a high level of success.

Two specific examples are illustrated by members of a science department and members of an education department. A committee of six science faculty members investigated CAI potentials at two major installations and has since been actively seeking federal support for local research facilities. The committee fully recognized that an operational base of competence must be established as a prerequisite to receipt of external support. The committee therefore carried out a series of preliminary activities with existing equipment, conducting experiments and collecting data in preparation for a major proposal. Support from the Esso Foundation in an amount of $45,000 for continuation of the activity was recently received.

Similarly, an education department committee currently working in individualized instruction visited specific operational settings in an attempt to discover how various problems of software, equipment centers and identification of basic competencies has been solved. A variety of apparently effective components are now being fed into the development of a new and experimental program.

The second year of operation focused more directly on encouraging faculty participation in educational research activities through exposure to current educational needs and developments as well as direct financial support for the conduct of research.

Exposure to educational needs and developments came through three avenues. First, potential investigators were

encouraged to identify exemplary research centers related to their own interests and then describing how a visit to one such center would assist in promoting their own research involvement. Secondly, attendance at professional conferences uniquely related to expressed interests and/or current involvement was encouraged. In both instances, RDG support was awarded for travel only and departmental funds were required for per diem expenses and an actual commitment of departmental funds made prior to RDG support approval. This partial departmental support requirement comes highly recommended for it serves to keep potential research activity within specific departmental and institutional goals.

The third method of exposing faculty to educational needs and developments involved participation in specifically designed seminars. The RDG position taken with regard to FY 1969 seminars was to encourage faculty members to select topics and speakers espousing their own interests and meeting their own specific need.

An attempt was also made to focus attention of a variety of academicians on educational problems by inviting all departments in the Division of Social Science to examine inter-institutional seminar type activities designed to promote their involvement in the solution of educational problems. The notions presented by Gene Glass (1968) at an AERA interest group meeting at the University of Colorado where emphasis was placed on the need for interdisciplinary contributions to educational research, were endorsed by this RDG group. Similarly, a recommendation of application of basic theories from the Social Sciences to specific problems in education by the newly formed committee on 'Basic Research in Education' sponsored by the National Academy of Sciences and the National Academy of Education was accepted.

Briefly summarizing small seminars, it may be noted that when initiative for planning a seminar is thrust on individuals most directly concerned with application of results of the seminar, only those departments possessing initial competence and interest will follow through. This self-selecting mechanism has the advantage of promoting only those areas where productive work is likely to be generated. Of course, there are levels of institutional competence where such a procedure would not only fail to produce effective participation but would be likely to impede progress, i.e., when no departmental research competence existed there would probably not be available leadership and where extensive departmental research competence existed there would be aggressive competition for support in established and probably highly specialized areas.

Small Grant Support

Although several relevant factors over the first two years support a specific focus on small grant support, it is more significant to discuss details of this form of support as it relates to upgrading educational research capacities and the mundane consideration of future funding.

First, in terms of future funding, it has become necessary to recognize factors taken into consideration by the organization responsible for evaluating local budget requests. The budget request of individual State University colleges is presented first to a central administration of State University of New York to be assimilated into a single State University request. Only those items consistent with total University policy can be expected to survive this initial examination. The four RDG State University units are now preparing a budget request providing for continuation of RDG type support that will be submitted not only from each of the four RDG units but also from several sister institutions. Local administrative support for this request has already been received and potential inclusion as University policy has been encouraged.

The University budget is then submitted to the Governor's office and from there is presented to the legislature. At this point, general across the board reductions are imposed rather than action directed at isolated aspects of the budget. With state budget balancing and increasing college enrollments of primary concern, the state executive budget can be made more attractive to the legislature if activities leading to reductions in educational costs appear. It is therefore considered expedient to associate research with instructional improvements as a means of increasing educational efficiency leading to reduced educational costs. Documented evidence from RDG small grant projects are being used to support such a program.

The basis for establishing a convincing argument for future state support includes the development of a format for; (1) examining current course structures and suggesting possible behavioral objective analysis, (2) providing models of instructional strategies designed to promote different types of objectives (possible Bloom's), and (3) recommended organizational structures for accomodating individualized methodologies.

Empirical evidence resulting from RDG involvement and particularly results of a RFP presented as Appendix A serve

as a key element in documenting success of the proposed approach. Secondly, the direct involvement of RDG coordinators on each campus in identifying the behavioral objectives in at least one course has been required. Cooperation with at least one academic staff member in devoting time to an analysis of one course has been secured and procedures utilized in the Dale Hamerus model (undated) for developing an instructional system are followed.

Concurrently, a library of operational instructional systems is being developed to serve all colleges in the present consortium plus additional units desiring to participate.

Associated with this instructional systems development phase is an emphasis on research related to the learner as well as organizational product and process variables associated with individualized instruction. A key factor, retrieval of, or access to, specific instructional methodologies or the concept inherent in 'Instructional Management' is already in developmental stages at Brockport. Eastman Kodak has awarded a personnel grant to Brockport to build a retrieval system designed for an 'Instructional Materials Center' with development occuring in the Center for Innovation in Education.

Two specific procedures have been implemented this year in an attempt to provide a viable basis for further operations. First, each campus coordinator has become responsible for initiating application of an instructional systems approach to at least one course on his campus as described above and the 'Basic Statistics' course has been distributed to all campuses.

Internal Organization for Sponsored Research

Organization

The following statement appearing in the Faculty Bulletin of one of the RDG units exemplifies the structure of RDG coordinators offices on each campus.

> "The Research Office, provides services to faculty and administration in the areas of institutional research and organized or sponsored research.
>
> Brockport is not legally authorized to receive funds directly from public or private agencies. It

is therefore necessary to channel all proposals soliciting funds through appropriate local and central administrative offices. The Research Office assumes responsibility for assuring local compliance with funding agency regulations and institutional support of all proposals requesting extramural support.

Faculty members interested in participating in organized or sponsored research activities are encouraged to avail themselves of the following services provided by the Research Office.

1. Securing information and guidelines for submission of research, development and training proposals.
2. Assistance with technical requirements such as cost sharing, indirect cost provisions, employee benefits, and related details specified by various sponsors.
3. Assistance in obtaining required signatures for legal submission of any proposal.
4. Preparation of final copies of research, development and training proposals.
5. Assistance in negotiating contracts with both private and public agencies for sponsored activities.

Institutional research is concerned with data required for decisions at the local level and as a basis for reports to Central Office. Although many investigations are carried out independently by various administrative offices in response to needs unique to their own operation, the Research Office does aid in coordinating data collection for total institutional purposes. Institutional Research reports are prepared periodically and are distributed through department chairmen and administrative council."

Reference Materials and Dissemination of Information

A basic set of reference materials found useful in responding to requests for information from faculty is presented in Appendix B.

A file of relevant detailed information organized around major acts (i.e., Higher Education Act, Elementary

and Secondary Education Act) subdivided by titles (i.e., Title I HEA - Continuing Education and Community Service) and Health Education and Welfare subdivisions (i.e., National Institutes of Health, Office of Education) subdivided by programs (i.e., NIH Division of Extramural Research Programs, OE College Library Resources) have been developed as required to support institutional goals and capabilities.

More advanced reference materials such as those provided by Appleton Century Crofts and Commerce Clearing House become useful only after a commitment to research training and development activities becomes well established.

Of course, as described more completely in a later section, the mere establishment of a center for information does little for the promotion of research. Knowledgeable, personal contacts with individuals and small groups of individuals is required to stimulate research related activity.

Decentralized information sources with specialized types of research information available within each department has been developing and is encouraged as individuals within departments develop skills required for proposal preparation. These centers of specific information evolve naturally and department chairmen are encouraged to identify competent individuals who may serve as recipients and disseminators of information pertinent to that particular area, i.e., National Endowment of the Humanities, Vocational Education, etc.

A file on each department including a statement of both long range and intermediate goals and a listing of individuals who have shown some interest in research related activities has been useful in preparing for visits at departmental meetings in which discussions on how extramural funds may be used to support institutional development are conducted.

Committees

Attempts to establish research committees during the first year of RDG support failed primarily because individuals appointed by department chairmen in response to a memorandum from coordinator offices lacked a commitment to research. Individuals were uninterested in reviewing information pertinent to their academic areas and failed to engage in the two-way flow of information required for the coordinator to collect data on potential sponsors for dissemination to appropriate individuals.

On the other hand, research review committees established late in the second year of RDG involvement for the purpose of recommending policy regarding faculty involvement in extramurally funded research, review of research proposals for a variety of programs, and disbursement of local funds have become viable and dependable. The later committee structure has evolved from a specific faculty concern and membership has resulted from peer recommendation and appointment. The later committee serves as a valuable link between faculty and administration but evolved on its own initiative.

RESULTS

A description of the University Awards Program (UAP) is presented as Appendix E and serves as the basis for one quantitative index of RDG involvement. Briefly UAP is designed to encourage State University faculty to engage in creative, scholarly and scientific activities.

Table I presents a summary of the number of awards to each of the four RDG campuses and relates growth to both the total UAP program and growth within non-RDG colleges.

It is possible to relate the extremely high rate of growth between '66 and '68 at Unit A and between '66 and '67 at Unit C to a single factor. In both instances, one individual began visiting various departments with specific information about the UAP program and provided encouragement for potential applicants. Verification of the effectiveness of this personal approach is obtained by noting the consistent growth at Unit A where the technique was maintained and the drop at Unit C where the individual responsible for initial growth assumed other, nonrelated duties. Units B and D have shifted responsibility from one office to another and sporadic UAP success further confirms the fact that consistent personal encouragement is a prerequisite of sustained institutional involvement.

The overall growth factor within RDG units as compared to a decrease in the remaining colleges can be accounted for by the personal contacts encouraged through RDG involvement and the fact that RDG units apparently had taken advantage of unutilized talents as hypothesized in the original RDG application.

Table 1

University Awards Program 1966-69

RDG Units	Number of Awards 1966	1967	1968	1969
Unit A	8	17	30	32
Unit B	22	28	20	29
Unit C	9	24	22	17
Unit D	22	20	15	25
RDG Total	61	89	87	103
% of Total Awards	12.1%	14.5%	14.3%	16.1%
Six remaining four year colleges	130	106	99	144
% of Total Awards	25.7%	17.2%	16.3%	22.5%
Total UAP Awards	506	616	609	641

The Washington Office of State University of New York is staffed by a group of professionals who assist faculty members from local campuses in arrangements with meeting appropriate program directors in Federal offices. Although not all visits to Washington by SUNY faculty members are recorded in the Washington Office, a record of entries (Table 2) over the past three years illustrates a rather striking difference between RDG and non-RDG units.

Table 2

Number of Visits Recorded in SUNY Washington Office over the Past Three Years

RDG Units	Number of Recorded Visits	
A	35	
B	6	Mean number of visits
C	13	per unit is 22.3
D	13	
	67	
Remaining six non-RDG units	38	Mean number of visits per unit is 12.6

Use of the Washington resource may be interpreted as one index of the amount of research activity engaged in by SUNY units.

Although applications to, and awards from public and private sponsors may be examined as a third index of research activity, results of RDG support cannot be expected to show effects in award increases for a least one more year (small grant projects awarded during the third RDG year have just been free of this yoke to prepare new proposals). An additional problem is encountered in comparing awards over time when one considers that levels of federal support have flunctuated rather significantly during the time period under consideration.

Even though this index contributes little to a current analysis, number of applications submitted (Table 3), number of awards received (Table 4) and dollar amount of awards received (Table 5) for a five and one-half year period are presented for comparative purposes.

Table 3

Number of Applications Submitted

	65	66	67	68	69	70
Unit A	4	23	49	38	48	8
Unit B	11	20	29	33	32	3
Unit C	28	30	30	37	33	2
Unit D	29	27	26	37	29	6

Table 4

Number of Awards Received

	65	66	67	68	69	70
Unit A	1	6	25	24	16	--
Unit B	8	7	20	20	7	--
Unit C	12	10	13	26	12	2
Unit D	11	5	12	17	10	1

Table 5

Dollar Amount of Awards Received

	65	66	67	68	69	70
Unit A	300	2,450	365,937	193,992	248,989	--
Unit B	6,450	75,270	139,445	50,179	58,299	--
Unit C	47,805	82,624	206,116	206,804	246,911	27,301
Unit D	118,440	95,134	148,767	273,501	150,021	16,836

A fourth index of RDG effect on the dependent variable of increased research activity is illustrated by a case study presented as Appendix D. The case study is intended to illustrate how a chain of events initiated through RDG activity has culminated in a sustained level of involvement.

Results similar to this example have occurred in a variety of situations and with a summary briefly described in Table 6 where individuals who have received assistance through RDG channels and have continued their contributions in the area of educational research are identified.

Again it may be pointed out that the largest number of small grant awards were made in the academic year just completed and project directors who would be expected to continue their research involvement have not had time to develop new proposals.

A fifth index partially attributable to RDG is the instructional improvement program recently initiated by Central Office of State University of New York. A significant amount of competence in instructional systems at the four RDG units originated with Oregon's Teaching Research Division seminars sponsored by USOE for RDG directors. Dissemination of materials resulting from these seminars have increased the level of instructional systems development sophistication and has placed RDG units in leadership positions. Although it is too early for a statistical summary of award results in this statewide program, unofficial sources have declared that 80% of an anticipated five million dollars will be allocated to four RDG units with the remaining 20% going to the six non-RDG units.

Actual disbursement of funds under this anticipated legislative appropriation will not be made until spring of 1971 and no official announcements are available at this time.

Table 6

RDG Sponsored Faculty Who Continued
Their Contribution to Educational Research

	Initial RDG Support		Additional Activity	
C. Thomas	Travel	$270	USOE Award	$ 9,931
J. Jensen	Travel	100	USOE Award	9,666
E. Gucker	Small Grant	800	Co-author of Esso Project	45,800
T. Rockhill	Small Grant	243	USOE Award	10,000
			NSF Application	40,034
R. Hellman	Small Grant	370	State University Application	3,200
D. Nasca	Small Grant	500	NSF Award	7,500
M. Robb	Small Grant	700	USOE Application	9,925
			Journal Article	
R. Jacobson	Small Grant	500	USOE Application	9,117
			USOE Application	76,512
			USOE Award	42,120
D. Berger	Small Grant	400	PHS Application	5,000
			UAP Award	1,500
			NSF Application	5,000
A. Zipp	Small Grant	300	UAP Award	500
R. Chaturvedi	Travel	78	NSF Award	2,000
R. Lehr	Small Grant	500	UAP Award	300
R. Doney	Small Grant	500	UAP Award	500
M. Wagner	Small Grant	400	PHS Application	4,056
W. Forrester	Small Grant	250	PHS Award	5,446
J. Deutsh	Small Grant	500	Journal Article	
			Esso Foundation Application	
E. Gaff	Small Grant	300	Conference Paper	
J. Mann	Small Grant	300	Co-author of Book	
D. Martin	Small Grant	300	Journal Article	

A sixth index of RDG activity is available in the form of administrative organization for sponsored research. Prior to beginning the three year RDG period, only one of the five units had identified an individual to promote, encourage and facilitate organized research. During the three year RDG period each of the five units supported a part time position for this purpose and at the conclusion, four of the five units each have a full time position identified for the purpose of promoting sponsored research activity.

CONCLUSIONS

Generalizations

1. Initiation of institutional endorsement and encouragement of faculty research will increase faculty research involvement.

2. Within the framework of institutional endorsement, identification of an individual to collect and disseminate sponsored research information on a personal basis is the single most effective technique for increasing research involvement.

3. Faculty visitations to operational research sites in related fields produced the highest, 'subjectively identified' cause for increased research involvement.

4. A potential technique for improving proposal writing skills has been 'discovered' and is being investigated further.

Discussion

Four of the five RDG consortium units were in an ideal state of readiness for research involvement three years ago when this project was initiated. Each unit provided full administrative support for participation in RDG with one manifestation available in the form of statements that research had become a high priority for merit increases and professional promotions. This climate of institutional endorsement is considered essential to increased research involvement noted in this three year project.

Within this institutionally endorsed framework, a variety of activities designed to increase research participation on the part of faculties who had previously been denied this opportunity were initiated. The most effective means for promoting research involvement, based on discernable cause and effect relationships presented in the section on 'Results' was through personal contacts with potential researchers. Personal contacts were initiated through department meetings aimed at identifying individuals interested in research involvement with a variety of 'opportunities' suggested to encourage further dialogue.

Faculty who were given the opportunity of visiting appropriate research facilities have identified this activity as the single most significant aspect of RDG support.

No cause-effect relationship data exists at this time however to support such a statement and only two specific examples of such an effect are reported in the section on results.

The project director has noted an increase in the efficiency of campus coordinators in evaluating proposals over the three years of RDG involvement. This behavioral change has probably occurred as a direct result of experience and was further tested in a specific situation that developed on the project director's campus.

An NSF institutional allowance of $11,000 was distributed to science faculty in a manner similar to small grant distribution under RDG involvement. Evaluation of proposals submitted in response to an RFP occurred through a faculty committee appointed by the Faculty Senate. Observation of dynamics in the evaluation session appeared to provide a basis for hypothesizing that increased awareness of criteria presented in the RFP occurred as judgements about individual proposals were being made. Based on this and earlier observations, it appeared that proposal writer sensitivity to RFP criteria could be increased through a brief simulation exercise. Such a simulation activity is now being considered in conjunction with the 1970 UAP (Appendix E) fall deadline in which approximately seventy-five proposals from each unit will be prepared. An appropriate experimental design is being considered for evaluation of the tentative hypothesis generated through RDG involvement.

APPENDIX A

Request for Proposals (RFP)

Proposals for experimental, developmental and survey research are now being accepted in the area of instructional improvement. Particular emphasis is being placed on investigations of methodologies, resources, organizational requirements, learner variables and types of outcomes designed to promote individualized instructional practices in higher education. Following is a list of questions prepared to illustrate the scope of activities supportable under this RFP. The list is not to be construed as limiting but rather suggestive of the type of activity leading to improved instructional practice.

1. What courses in higher education have been designed and implemented based on instructional systems approaches?
2. What technological developments are now readily available for use in individualizing instruction?
3. How can faculty be encouraged to define course outcomes in behavioral terms?
4. Are there identifiable learner variables that have an effect upon individualized instructional practices?
5. Is there a pattern of methodologies that can be developed to guide the matching of behavioral objectives with probable types of instructional procedures, i.e., verbal skill behavior-written practice, language lab type sessions, recording and playback, etc.
6. How should a student be directed to engage in specified instructional sequences designed to promote behavioral objectives?
7. How can a variety of instructional sequences drawn from a large pool, be made readily available for large numbers of students?
8. How can different student backgrounds be accomodated as an input variable in various instructional systems?
9. What are the economics of converting to instructional systems approaches in different content areas?
10. Is there a desirable learner ratio in terms of involvement in individualized study and class participation?
11. How can students be aided in the adjustment to individualized study which requires the student acceptance of increased responsibility?
12. What relevant variables must be considered in adopting instructional systems approaches?

Although RDG support is somewhat limited, should the request for support substantially exceed current funds, it will be possible to seek additional support from both private and public agencies. Small grant programs in both USOE and PHS serve as already established sources of funding.

APPENDIX B

Reference Library

Dermer, Joseph; How to Raise Funds from Foundations; Public Service Materials Center, 1968.

Krathwohl, David R.; How to Prepare a Research Proposal; 1966

National Science Foundation, Guide to Programs, NSF 69-13, June 1969.

National Science Foundation, Schedule of NSF Programs for Education in the Sciences, Calendar Year 1970, February 1970.

National Science Foundation, Grants for Scientific Research, NSF 69-23.

Office of Economic Opportunity, Catalog of Federal Domestic Assistance, January 1969.

Russell Sage Foundation, The Foundation Directory, 1967, New York.

Staff of the Council on International Educational and Cultural Affairs, Directory of Frequent Contacts for International Educational, Cultural, Scientific and Technical Exchange Programs, Department of State, November 1969.

U.S. Department of Health, Education, and Welfare/Office of Education; How the Office of Education Assists College Students and Colleges, United States Government Printing Office, Washington, D.C., 1969.

U.S. Department of Health, Education, and Welfare/Public Health Service; National Institute of Mental Health Support Programs, National Institute of Mental Health, Chevy Chase, Md., 1968.

U.S. Department of Health, Education, and Welfare/Office of Education; Federal Funds and Services for the Arts; U.S. Government Printing Office, Washington, D.C., 1967.

APPENDIX C

Case Studies

Described in the following pages are specific examples of how RDG involvement has led to both institutional and individual progress in research and development activities.

Statistics laboratorv -- Dr. Donald Nasca
SUC at Brockport

A statistics laboratory based on the 'Instructional Systems' approach presented in the first CORD, Oregon Conference in August, 1968 has been established at Brockport. The course introduction illustrates how the course is now organized. The course has served as the basis for a National Science Foundation Award of $7000 and continues to serve as a model of the instructional systems approach now being applied to specific courses in a variety of departments.

The statistics laboratory now serves as a three credit hour requirement for 120 sociology and forty education students per semester and some components of the laboratory have been adapted for use by geography, economics and evaluation courses.

Development of the course has been completed and the course can now be supervised by one graduate assistant with an instructional cost reduction factor of 11.7. (160 students x 3 credit hours, 480 student credit hours per semester. One full time faculty position equals an average of 205 student credit hours and a teaching assistant is considered as one-fifth of a faculty position or equal to forty-one student credit hours. 480 ÷ 41 = 11.7.)

BASIC STATISTICS

SELF-STUDY COURSE

INTRODUCTION

This three semester hour course in Basic Statistics is designed as a self-study course. You are given a list of behavioral objectives in eleven content areas and a series of specific activities that will enable you to develop the appropriate skills and understandings. The "Basic Statistics Guide" will serve as your 'Instructor' and will provide you with a list of activities designed to aid your attainment of the required skills and understandings.

READING

The activities listed with each set of objectives in the "Basic Statistics Guide" are suggestions for acquisition of required skills. However, because of different backgrounds and ability to grasp new concepts, some individuals may find that only one of the activities listed is required for full comprehension. You are on your own so far as the amount and extent of involvement with the listed references is concerned. All textbooks listed may be checked out from closed reserve in Drake Memorial Library and copies of McCollough/VanAtta, Elzey and Tate are available in the bookstore.

It is recommended that you complete at least one set of suggested activities and accompanying exercises for each unit and then try the criterion items (Part II) for that unit. Any difficulty with the criterion items should be regarded as an indication of the need for additional study on that unit. A reference different from the one first used may then be consulted to aid in supporting knowledge and skills already acquired. Of course, there are some students with a good math or evaluation background who will find it possible to respond correctly to all criterion items with little or not additional assistance.

REFERENCES

A Programmed Introduction to STATISTICS
by Freeman Elzey

BASIC STATISTICAL CONCEPTS
by Jack Bradley and James McClelland

PROGRAMMED REVIEWS OF MATHEMATICS Introduction to Statistics by Flexer and Flexer

STATISTICAL CONCEPTS
by Celeste McCollough and Loche VanAtta

STATISTICAL CONCEPTS A Basic Program
by Jimmy Amos, Foster Brown, Oscar Mink

EXERCISES

Exercises in McCollough/VanAtta, Elzey and Tate are strongly recommended for practice as the type of examples used in the final exam. Answers to most of the exercises are given in the back of each book and may be referred to in verifying your calculations. Competence and confidence in completing the recommended exercises assures you of the needed skills involved in the course. Inability to complete the exercises would serve as a good indication of the fact that you are having problems and should seek help from your appropriate departmental representative.

CALCULATORS

SCM 'Cogito' and Monroe '990' calculators are available in the Statistics Laboratory which is open during specifically scheduled hours and is staffed with students familiar with the use of the calculators. The calculators may be used during your final exam and numerous calculations will be made much easier if you learn how to use these calculators early in the course. Audio Notebook tracks 16 and 17 provide basic instruction for use of the calculators.

AUDIO NOTEBOOKS AND OVERHEAD TRANSPARENCIES

Basic Statistics, audio notebook and either overhead transparencies are available for use and may be obtained from the reserve section of Drake Memorial Library or the Statistics Laboratory. The first two audio notebook tracks are relatively simple, introductory type presentations while the remaining tapes tend to clarify issues presented in the reading.

HOMEWORK

A homework schedule is designed to assist you in maintaining a regularly scheduled pace through the course and to provide you with feedback on your work. The homework schedule varies for different individuals and you are urged to follow directions closely.

FINAL TEST

The final test will be administered upon your request during the last week of classes or during exam week. This means that you may take the test any time prior to the end of the semester or at the latest, during exam week at the end of the semester. You must schedule your appointment to take the final test in the Research Office, room 210 Hartwell. Calculators are reserved for final exam use and will generally not be available for practice during the last week of the semester.

Test items will be taken directly from the criterion items presented as Part II of the "Basic Statistics Guide". Questions will be worded similarly to the way the appear in Part II. However, answers will be rearranged and data upon which computations are based will be changed. In fact, numerous final test combinations are available.

Performance questions include calculation of; correlation, t-ratio, chi square, prediction, standard deviation, etc.; while comprehension questions include use of appropriate formulas, symbols, substitutions, etc.

WARNING: THE BIGGEST DIFFICULTY WITH THIS COURSE IS FREEDOM. FREEDOM IS ONE RESOURCE THAT STUDENTS TEND TO UTILIZE TO ITS FULLEST EXTENT AND UNLESS YOU DISCIPLINE YOURSELF TO SPEND AT LEAST THREE HOURS A WEEK --- BEGINNING WITH THE FIRST WEEK --- YOU ARE DECREASING THE PROBABILITY OF ACHIEVING SKILLS NECESSARY TO COMPLETE THE COURSE.

NSF AWARD - $7,000

COMPUTER APPLICATIONS IN BASIC STATISTICS

ABSTRACT

A 'Basic Statistics' course has been developed to accomodate the wide variety of backgrounds possessed by students enrolling in beginning statistic courses in the social and natural sciences. The course is in a self-study format with an 84 page study guide which presents:

1. Behavioral objectives to guide student study
2. Suggested activities to aid in acquisition of defined behaviors
3. Criterion tasks with answers
4. All required formulas with appropriately completed examples.

Study materials for the course include several textbooks including five linear programed texts, twenty-one sets of overhead transparencies with overlays to developmentally illustrate basic concepts, a set of seventeen audio tapes serving to coordinate learning activities, directions for use of SCM 240 Cogito electronic and Monroe 990 calculators and access to consultants in each department sponsoring the 'self-study' course.

The self-study course was inaugurated in the summer of 1967 and has been used with over 300 students during the 68-69 academic year.

Two basic types of computer applications are now being considered to further aid students in this basic statistics course. The first, a computer managed instruction phase will serve to identify the input characteristics of students enrolled in the course and assign them to appropriate 'content' areas in the study guide. This will be accomplished by presenting the student with a random sample of criterion items arranged in a content hierarchy. When ability to accurately answer questions falls below 90%, students will be directed to leave the computer terminal and continue in the study guide at an appropriate entry point.

The second computer application, that of computer aided instruction, involves student interaction with the computer to examine raw data in a fashion similar to the applications now going on at Chapel Hill. Directions for using the computer terminal to provide opportunities for

students to access real data and operate on the data to prepare descriptive results will be included in appropriate places in the 'study guide'. Much of the software for this phase has already been developed by Chapel Hill personnel. Additional 'learning activities' are continually being added to the 'Basic Statistics' guide in current developmental stages as attempts to bring students in contact with meaningful experiences continues and the computer applications now being considered will be added to the learning resource material in the most appropriate context based on behavioral outcomes desired.

APPENDIX D

Small Grant Support

Gucker, Dr. Edward -- A Proposal to Evaluate the Effectiveness of Simulation Using Digital Computers in Developing Conceptual Understanding in Undergraduates

Rockhill, Dr. Theron -- Computer Based Resource Unit on Sets, Relations, and Functions

Strandberg, Dr. James -- Technical Training for Complex Problem-Solving in the Behavioral Sciences

Hammond, Dr. Robert -- French Film as Literature

Hines, Mr. Robert -- Development of Audio-Tutorial Instruction for Economics 100

Robb, Dr. Margaret -- Project Undergraduate Research. The Development of Guidelines for the Assistance and Guidance of Undergraduate Creative Endeavors in Perceptual-Motor Learning

Willmer, Mr. J.E. -- Research in Instructional Innovations

Zipp, Dr. Arden -- The Revision and Modernization of the General Chemistry Laboratory for Science Majors

Deutsch, Mr. John -- Physical Chemistry Overhead Transparencies

Haseltine, Dr. Robert -- Upgrading the Basic Courses in Economics

Karl, Mr. Harold -- The Relationship of Melodic Dictation and Sight-singing Achievement

Schnur, Dr. James -- A Study to Compare the Effects on Achievement in Programmed Instruction of Skinnerian Response Affirmation Order with Reversed Affirmation Order

Young, Dr. Richard -- Coordinated Media Approach for Simulating Realistic Field Experience in Geologic Investigations and Analysis

Kline, Mr. George -- Film as An Inductive Elicitor of Poetic Conceptualizations

Muller, Mr. John -- Multidimensional Scaling of Educational Objectives

Rockhill, Dr. Theron -- The Use of Programmed Instruction as a Supplement to Large Group Instruction

Stolper, Dr. Richard -- An Inquiry into Individualizing Instruction through Variations in Schedule of Learning Activities

Dilcher, Mr. Ron -- A Study of Attitudes and Verbal Creativity in Biology 101

Powell, Doris -- Individualized Instructional Opportunities in Art History

Mann, Dr. John -- Humanizing the Educational Process: The Use of Non-verbal Methods in Introductory Sociology

Fuller, Dr. John -- Proposal for Pilot Study on the Changing Photographic Image in America during the 1960's as Art Itself and as Part of Mixed Media

Walker, Dr. Lawrence -- Development of a Scaling Procedure Based on CUES

D'Innocenzo, Dr. Nick -- An Understanding of Art and Man through Personal Synthesis

Skoldberg, Dr. Phyllis -- A Historical Anthology of Violin Literature Lecture-Performance Series

Wagner, Dr. Mahlon and Dr. William Forrester -- An Innovation in the Teaching of General Psychology

Kline, Mr. George and Dr. James Strandberg -- Poetic Sensitization

Martin, Dr. D.A. -- Research Project to Evaluate the Geneseo Economics TV Project

Drushler, Mr. Paul -- I.P.I. for Instrumental Music Grades 4 - 8

Bagley, Dr. Charles -- The Selection and Evaluation of Statistical and Research Concepts in Educational Research and Measurement Courses

Nasca, Dr. Donald -- Development of an Individualized Statistics Laboratory

Straub, Mr. William -- Effect of Video Tape Feedback on Learning of Motor Skills

Rockhill, Dr. Theron -- A Study of Various Supplements to Large Group Instruction in College Mathematics

Brown, Mr. Jerome -- Effect of Data Returns on Experimenter Expectancy

Zipp, Dr. Arden -- Conductance in Solvents of Intermediate Dielectric Constant

Schenitzki, Dr. Dietmar -- Sex and Score Feedback as Determinants of Game Behavior

Lehr, Dr. Robert -- The Pre in Spatial Discriminations

Hellmann, Dr. Robert -- The Woody Vegetation of Fancher Campus, SUC Brockport

Fauth, Dr. John -- The Catoctin Formation - Petrography and Structural Analysis

Doney, Dr. Ronald -- Reduction of Amino Acid Sulfoxides in a Cell-Free System

Muller, Mr. John -- Interdisciplinary Core Program

Lawson, Mr. Thomas -- Individualizing the Elementary Mathematics Curriculum

APPENDIX E

Research Foundation Awards

GUIDELINES AND POLICIES FOR SUNY RESEARCH FOUNDATION AWARDS

I. THE AWARDS

Through its awards programs to members of the Faculty of State University of New York, The Research Foundation of State University of New York strives to encourage research, creative and scholarly activities. It provides funds, through Grants-In-Aid, for the expenses involved in such activities. It provides support for the scholarly activities of the faculty in free time through its Faculty Research Fellowship program. It supports scholarly publications through the University Publications Committee.

Applications for Grants-In-Aid and Faculty Research Fellowships are evaluated by the University Awards Committee; the committee's recommendations are made to the President of the University who makes the award on behalf of the Research Foundation.

It is believed that the Fellowship represents non-taxable income to the recipients.

II. ELIGIBILITY

(1) Any member of State University of New York faculty at an eligible institution may apply, except that Faculty Research Fellowships are not available to those faculty members of the State-operated campuses whose services are required by the institution for more than ten months in any twelve-month period. The eligible institutions include all of the University State-Operated Colleges, the Institutes, the College of Forestry, the University Centers (Albany, Stony Brook, Harpur, and Buffalo). Because of other possible sources of support, applications from the Medical Centers have a low priority unless a special case is made for a particular application. Faculty of the Community Colleges and the Contract Colleges are ineligible,

(2) No age limitation of any kind is involved.

(3) The first year members of the faculty are eligible for both Grants-In-Aid and Faculty Research Fellowships; however, if a choice becomes necessary some preference may be given to those who have served at least one year.

(4) The recipient of a Faculty Research Fellowship is expected to relinquish the award in the event he does not plan to continue his service in the State University during the academic year following the effective date of the award.

(5) It is possible to apply both for a Faculty Research Fellowship and a Grant-In-Aid at the same time but no more than one application for each award can be accepted from any individual in the same series.

(6) A maximum of two Faculty Research Fellowships may be awarded in successive years, so that an application for a third successive fellowship is automatically eliminated, but an applicant becomes eligible again after the lapse of one year. Progress made during previous fellowships is an important factor in the awarding of subsequent fellowships. The committee encourages applications to other agencies for financial support, and discourages complete dependence upon the Research Foundation for project funding.

(7) The University has a Publications Committee to assist members of the Faculty in publication and major publication costs support should be sought through the Publications Committee.

III. CRITERIA FOR EVALUATION OF APPLICATIONS

In evaluating applications the committee is governed by the criteria of the capability and the seriousness of purpose of the applicant and the value of the proposed project. Evidence of capability is judged as a composite of educational background, experience, honors, previous publications, evaluation by colleagues, and the way in which the application itselm is written. Seriousness of purpose is judged by previous activities or publications, the extent to which the project has been developed at the time of the application, and the reputation of the applicant for serious dedication to such activities. Evaluation of the merit of the project itself is largely a matter of judgment by the committee, but this may be influenced substantially by any statements made in the application or in supporting letters of recommendation.

IV. ACCEPTABLE EXPENDITURES

The following expenditures are considered appropriate:

(1) The usual expenses involved in research or scholarly activity, with equipment, however, remaining the property of the Research Foundation.

(2) Out-of-pocket expenses for necessary travel to libraries, etc. is an acceptable expenditure. Foreign travel is also supported when it is essential for the project, but foreign travel is usually not supported to initiate a study or when it appears that repeated foreign travel is going to be required to complete the study. The applicant is first expected to exhaust all relevant domestic sources, and applications for foreign travel are considered more favorably when other sources of travel funds are also available.